MOUNT BAKER-SNOQUALMIE NATIONAL FOREST
MINERALS REPORT
SOUTH FORK STILLY

Todd Griffin, Forest Geologist

12/23/2016

1. Applicable Laws, Regulations, and Policies

1872 Mining Law

1970 Mining and Minerals Policy Act

1976 Federal Land Policy and Management Act

36 Code of Federal Regulations (CFR) Parts 228.12 (Access)

2. Relevant Standards and Guidelines

1990 Forest Plan, Forest-wide standards and guidelines, minerals and geology, pp. 4-136.

1994 Northwest Forest Plan, Record of Decision, Mining, C-17 & C-35.

The following Standards from the Forest Plan, as amended (2005, 2005a), apply to all alternatives:

- Forest-wide standards and guidelines, minerals and energy (4-136)

    1. Mineral exploration and mineral removal are permitted throughout the Forest, except withdrawn areas.

3. Analysis Methodology, Assumptions

Methods of analysis used to complete this report include Geographic Information Systems (GIS) analysis, Forest Service record search, and a records search of Bureau of Land Management (BLM) data bases (USDI BLM, 2016).

4. Affected Environment

Geologic Setting

The Forest is located along the west side of the crest of the Cascade Mountains. The Cascade Range in Washington State is part of the American Cordillera, a mountain chain extending more than 12,000 miles from Tierra del Fuego to the Alaskan Peninsula. The Cascade Mountains can be separated into two distinct geological regions within the Forest, with the approximate division occurring at Interstate 90. The differences, north and south of 1-90, in geology, topography, bedrock, and soils are important because many components of the natural environment are influenced by the character of the geologic material.

The mountains north of 1-90 consist of metamorphic rocks intruded by granitic batholiths. Uplifting and erosion has produced a very rugged and steep topography. Vertical distances may exceed over 4,000 feet from valley floor to the adjacent peaks. Many peaks exceed 5,500 feet and contain perennial snow and ice. The volcanic peaks of Mt. Baker and Glacier Peak rise above other rugged peaks and ridges. Common features include long, steep slopes containing timber, intermingled with talus slopes, rock outcrops, and meadows. The high alpine scenery is impressive, with serrated, rocky ridges and numerous meadows and small glacial lakes.

Minerals

Minerals are fundamental to the Nation's well-being; Forest Service policy encourages the exploration for and development of the mineral resources on national forest land. At the same time, mineral exploration, development, and production activities are integrated with the use, conservation, and protection of all other resources (USDA Forest Service, 1990).

Mineral commodities are classified by law into three distinct groups: locatable, leasable, and salable. Management of each commodity varies considerably as does the authority of the Forest Service to control the exploration for and development of each commodity.

Locatable Minerals

Locatable minerals are those minerals which, when found in valuable deposits, can be acquired under the General Mining Laws of 1872 (as amended). Examples of locatable minerals occurring on the Mt. Baker-Snoqualmie National Forest include, but are not limited to, copper, gold, molybdenum, tungsten, olivine, chromite, nickel, zinc, silver, lead, and uncommon varieties of limestone, gemstones, and other minerals having unique and special values.

Citizens and those who have declared their intent to become citizens of the U.S. have a statutory right to explore vacant, unwithdrawn public land for these minerals. Upon discovering a valuable deposit, they have a right to locate, mine, and remove the minerals. Forest Service control of these activities is limited to minimizing impacts on surface resources. This is accomplished by reviewing plans of operation to ensure environmental protection standards are met. Protection standards include standards for air, water, cultural resources, threatened and endangered species, and many others. The prompt reclamation or restoration of disturbed lands is included as part of the operating

plan process. As far as access, "an operator is entitled access in connection with operations, but no road, trail, bridge, landing area for aircraft, or the like, shall be constructed or improved, nor shall any other means of access, including but not limited to off-road vehicles, be used until the operator has received approval of an operating plan in writing from the authorized officer" (p. 182, 36 CFR 228.12).

The Mt. Baker-Snoqualmie NF has a long history of mining, dating back to the late 1800's. A total of 148,187 acres within the Forest have a moderate to high potential for development of locatable minerals (USDA Forest Service, 1990). There are currently 210 unpatented mining claims (USDI BLM, 2015) on the Forest, with the majority of these being located in the Middle & North Fork Snoqualmie, Finney Block, Sultan Basin, and the Twin Sisters area.

There are five active mining claims located in the project area (USDA BLM, 2016). Carole's Gold is a placer claim located in the SE1/4, Section 20, T. 30N, R. 9E, Willamette Meridian; GNG 3 is a placer claim located in the SW1/4, Section 22, T. 30N, R. 9E, Willamette Meridian; GNG 4 is a placer claim located in the SE1/4, Section 22, T. 30N, R. 9E, Willamette Meridian; GNG 5 is a placer claim located in the SE1/4, Section 23, T. 30N, R. 9E, Willamette Meridian. All these mining claims are located along the South Fork Stillaguamish River and can be accessed by the Mountain Loop Highway (county road).

No prospecting activities have been observed or recorded at the Carole's Gold mining claim. In 2012, the claimants of GNG 3-5 submitted a notice of intent to the district ranger describing their intent to conduct gold prospecting on each of their claims for a one day event. No other activities at these claims (GNG 3-5) have been observed or recorded.

Also, small scale prospecting activities could be occurring within the project area and without the knowledge of the Forest Service. Prospectors are not required to inform the Forest Service of their prospecting activities if their actions are not creating a significant disturbance to surface resources. These prospecting activities may include, but not limited to, small mineral sample collection with hand tools, gold panning, suction dredging, non-motorized hand sluicing, rock hounding, metal detecting, marking & monumenting, and utilizing open Forest Service system roads.

Leasable Minerals

Leasable minerals are those mineral commodities which may be acquired under the Mineral Leasing Act of 1920, as amended, the Mineral Leasing Act for Acquired Lands, and the Geothermal Steam Act of 1970, as amended by the 2005 Energy Policy Act. On the Mt. Baker-Snoqualmie National Forest, leasable minerals include coal, oil, gas, and geothermal resources. Also included are all minerals, except saleable, when occurring on acquired lands. These minerals are subject to exploration and development under leases, permits, or licenses granted by the Secretary of Interior. This authority is administered by the Bureau of Land Management. Forest Service authority for

management of these leasable minerals is still oriented towards surface protection. However, control of prospecting and development activities is considerably stronger in this case than it is for locatable minerals.

Only 18,225 acres in the Forest are classified as prospectively valuable for oil & gas resources (USDA Forest Service, 1990). Oil & gas are not thought to exist on the Forest in commercial quantities, but only limited surveys have occurred.

Limited exploratory drilling had been conducted, however, the majority of the Forest (1,222,812 acres) has been classified "prospectively valuable" for geothermal energy. Recently, there has been two exploratory shallow temperature gradient wells (700 feet) drilled on the Skykomish district, one in Beckler quarry and one along Forest System Road (FSR) 6500-115 in the vicinity of Harlen creek. One deep temperature gradient well (5,000 feet) was drilled on private land within the Skykomish district boundaries in 2012. Currently no plans have been submitted for additional drilling on the Forest; however, the Washington State department of natural resources has recently applied for a permit to conduct geophysical surveys for geothermal resources near Mt. Baker.

NFS land has 14 identified hot or mineral springs identified as having direct utilization potential (Bloomquist, 1985). Areas identified as having indirect, electrical generation potential include the Sulphur Creek Hot Springs and Mt. Baker where current pending lease application sites are located (USDA Forest Service, 1990).

Currently there are no oil, gas, or geothermal leases in or near the project area.

Saleable Minerals

Salable minerals are common varieties of sand, stone, gravel, pumice, pumicite, cinders, and clay and are of relatively low unit value. They are generally used for construction materials and for road building purposes. These minerals are disposed of under the authority of the Materials Act of July 31, 1947, as amended by the Act of July 23, 1955. Disposal of salable minerals from public lands administered by the Forest Service is entirely at the discretion of the authorizing official (p. 184, 36 CFR 228.4-228.67). Management of operations on permit areas is similar to the management of leasable mineral activities.

Saleable minerals have been identified in the project area. Seventy one sites have been identified with a quarry status as active (11), closed (18), potential sites (20), or unknown (22). All existing active quarries are currently being utilized exclusively by the Forest Service for in-service use, which includes road maintenance and various other agency projects. The future demand for these materials is likely to reflect the level of road building and maintenance needed in conjunction with timber harvest and other Forest projects.

There is currently little public interest in saleable minerals in the project area. Over the past five years the Darrington ranger district has issued one mineral material permit to the public (USDA Forest Service, 2016).

Rockhounding

Rockhounding is the recreational study and hobby of collecting rocks and mineral specimens from their natural environment. Although the Forest Service has no formal policy for rockhounding, it is generally recognized that casual collecting of rocks, minerals, and common invertebrate and plant fossils for non-commercial use is a valid recreational use of National Forest System lands. Rockhounding does not require a permit, except as provided by other statutes and agency regulation (i.e. petrified wood).

The Darrington Ranger District currently does not have any areas officially designated for rockhounding. Rockhounding is available throughout the district, except in areas withdrawn from mineral entry, private in-holdings, or on mining claims filed through the Bureau of Land Management (BLM). It is currently unknown how many members of the public are accessing Forest lands for rockhounding since a permit is not required. There are no known issues related to resource damage from rockhounding activities in the project area, nor have there been any complaints from the public regarding rockhounding activities within the project area.

5. Environment Effects

Minerals

Alternative A - No Action

No direct or indirect effects on minerals are anticipated from the No Action Alternative beyond those effects that currently occur. All existing open roads would remain available to mining claimants, prospectors, rockhounds, and lease & permit holders. Current conditions and trends associated with minerals in the project area would continue, as outlined in the Affected Environment section above.

Alternatives 2
Direct and Indirect Effects

Locatable

No direct effects for locatable minerals are anticipated from the Proposed Action Alternative beyond those effects that currently occur since access to each mining claim will not be affected. The Mountain Loop Highway provides access to all existing mining claims and will not be affected by project activities.

An indirect effect of closing and decommissioning Forest roads in the project area would be to concentrate the small scale prospectors and rockhounds into smaller and smaller areas. It is the small scale prospectors and rockhounds that may be operating in the area without the knowledge of the Forest Service that may lose vehicular access. Concentrating prospectors and rock hounds into a smaller areas may increase the likelihood for resource damage from those activities. However, with the limited amount of mineral prospecting interest in this area impacts are expected to be minor.

Table 1 Existing Mine Access

MINE	ORCM	Case Type	ACCESS ROAD(S)
Carole's Gold	160710	Placer	Mountain Loop Highway
GNG 3	169210	Placer	Mountain Loop Highway
GNG 4	169211	Placer	Mountain Loop Highway
GNG 5	169212	Placer	Mountain Loop Highway

Leaseable

As there are no oil, gas, or geothermal leases in or near the project area there are no impacts expected to these resources.

Saleable

All eleven quarry sites currently being utilized (active) would retain vehicular access from all alternatives, in some instances access would be improved. Therefore, there would be very little impact to saleable minerals.

Cumulative Effects

Cumulative impact is the impact on the environment, which results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor or collectively significant actions taking place over a period of time (40 CFR 1508.7).

Table 2 below lists future, present, and past projects within the vicinity of the project area which may have effects that spatially and temporally overlap with the projected effects of the project. Future projects are listed first, followed by present ongoing projects, followed by past projects. The table is intended to be a screening mechanism for possible cumulative effects.

For this analysis, a cumulative effect is the result of the accumulation of impacts from past, present, or future projects that may affect access to existing mining claims and active mineral material sites. Since this project would not deny access to any existing active mine site or active mineral material site, and no other projects were found in the

cumulative effects table to deny or reduce access, there would not be any cumulative effects from future, past, or present projects to mining access.

6. Forest Plan Consistency

All Alternatives would meet the Forest Plan standards and guidelines for minerals and geology, and would therefore be consistent with the Forest Plan (USDA, 1990), as amended (USDA FS & USDI BLM, 1994).

7. References and Citations

Bloomquist, R.G. 1985. Evaluation and ranking of geothermal resources for electrical generation or electrical offset in Idaho, Montana, Oregon and Washington. Technical Report, Washington State Energy Office, Olympia, WA.

Tabor and Haugerud. 1999. Geology of the North Cascades, A Mountain Mosaic. The Mountaineers Books.

Title 36 Code of Federal Regulations. Parks, Forests, and Public Property, Parts 200 to 299. Washington DC. Office of Federal Register National Archives and Records Administration.

Title 40 Code of Federal Regulations. Council on Environmental Quality, Parts 1500-1508. Washington DC. Executive Office of the President.

US Geological Survey. 2004. Geological Provinces of the United States. Internet Web site: http://geomaps.wr.usgs.gov/parks/province/pacifmt.html. Accessed on April 16, 2008.

USDA Forest Service. 1990. Mt. Baker-Snoqualmie National Forest Land and Resource Management Plan and FEIS. Seattle, WA.

USDA Forest Service, USDI Bureau of Land Management.1994. Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl. Portland, OR. (Commonly referred to as the Northwest Forest Plan.)

USDA Forest Service. 2015. Natural Resource Manager. Retrieved from https://iweb.fs.usda.gov

USDI BLM. 2015. Bureau of Land Management's Land and Mineral legacy Rehost 2000 System. Retrieved from http://www.blm.gov/lr2000

8. Maps & Figures

Table 2 Cumulative Effects

Activity	Extent	Timing/ Comment
Future Actions		
Future timber harvest on private and state lands	Extent is unknown, private and state timber lands to the west of the forest boundary.	No currently known FPAs for state or private lands.
Gold Basin Sediment Reduction Project	Gold basin Riparian area	Design stage- Draft EA ready to go out. Implementation projected for 2017 or 2018
Campground/Rental Maintenance - Hazard Tree removals	11 Campgrounds from Turlo to Beaver Creek campground, and Picnic areas (Hemple, Big 4)	Yearly
ERFO Road repairs -	Need list of approved sites from Felix/Santino	NEPA in 2017 with Implementation in 2017/ 2018
Mt. Loop Road maintenance	Road cleared, roadside brushed	yearly
Secondary Road and Trail Maintenance	Secondary road brushed every 3 years, grade/blade 2 times per year. Rock pit maintenance, Trail maintenance –yearly.	Yearly
Ice Caves Bridge Repair and Boardwalk Upgrade	Trail between Ice Caves parking lot and south bridge abutment	NEPA - 2017 Implementation - 2018
Camp Silverton Building removal and permit transfer to USFS	Decommission sites adjacent to the Stillaguamish River.	Projected for 2017
Coal Lake SNOTEL - installation of new SNOTEL site equipment	Construction of standard sensor configuration including a snow pillow, a storage precipitation gage, and a temperature sensor.	NEPA and construction 2017 – funding provided in a FWS grant to Sauk-Suiattle Tribe and NRCS
DNR Sustainable Trail Plan in the Morning Star Natural Resource Conservation Area	Trail planning for Morning Star Conservation area in the SF Stillaguamish and Upper SF Sauk River drainages and Spada Lake area	Planning in 2017 with a trail plan finalized in 2018 with implementation to follow.
Present Actions		
Campground/Rental Maintenance - Hazard Tree removal	11 Campgrounds from Turlo to Beaver Creek campground, and Picnic areas (Hemple, Big 4)	Yearly, on-going - cover in current condition
Mt. Loop Road maintenance	Road cleared, roadside brushed	Yearly, on-going- cover in current condition
Mt. Loop Emergency Road Repair	Road repair and mitigation at select sites along Mt. Loop	Sno.Co. response to high water events in 2015, 2016-2018
Secondary Road maintenance	Routine road maintenance on open roads in the watershed.	On-going, Short-term sediment with maintained ditches.
Trail maintenance	Routine trail maintenance on accessible trails in watershed.	On-going, minor short-term sedimentation.

Invasive Plant Treatments	Treatment of known sites in the watershed.	On-going, minor short-term impacts from herbicides.
Non-Federal Land Timber Harvest:	Harvest below Forest boundary – in-holdings	No known
Past Actions - can be part of the current condition and addressed there		
Waldheim Emergency Road repairs	Road repaired and rock buttress slope	Completed 2011- cover in current condition
River Road repairs	Work accepted in 2013 after monitoring.	Completed 2013. - cover in current condition
Waldheim Slide repair mitigation	Riparian and aquatic habitat restoration	Waldheim and Camp Silverton - completed in 2016 or still items on-going?